QC ABSTRACT

Nameof Work: Pothole filling to Roads in Ward No.06 (Thanisandra) Surrounding area Byatarayanapura Sub Division, BBMP, Bangalore

Sl. No.	Item	Quantity As Per BOQ	Required No's of testes	Actual No's of testes	Testes	Frequency
1	WMM	384.52Cum	-	-	-	-
		Gradation	2	2	-	-
		AIV	1	1	-	-
		Shape Test	1	1	-	-
		Atterberg Limits	2	2	-	-
2	BC	2564.66 Sqm	-	-	-	-
		Quality of Binder	1	1	-	-
		AIV	1	1	-	-
		Shape Test	1	1	-	-
		Gradation	1	1	-	-
		Specific Gravity	1	1	-	-
		Stability of Mix	1	1	-	-
		Bitumen content	1	1	-	-

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Job No.: CACE/BBMP/CP/W.No.06/2021-22 Date : 09.03.2022

GRADATION FOR WMM

Client : **Assistant Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Sri. Chethan P,** Contractor, Bangalore.

Name of Work : Pothole filling to Roads in Ward No.06 (Thanisandra) Surrounding area Byatarayanapura Sub Division, BBMP, Bangalore.

IS Code: : IS 2386 (Part 1):1963(RA 2011)

Date of Testing : 09.03.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, grar 10000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Requirement as per MORTH 5th edition table no 400.13
53	0	0	0	100	100
45	182	182	1.8	98.2	95-100
22.4	2563	2745	27.5	72.6	60-80
11.2	2160	4905	49.1	51.0	40-60
4.75	1868	6773	67.7	32.3	25-40
2.36	1160	7933	79.3	20.7	15-30
0.600	598	8531	85.3	14.7	8-22
0.075	1210	9741	97.4	2.6	0-5

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Job No.: CACE/BBMP/CP/W.No.06/2021-22 Date : 09.03.2022

GRADATION FOR WMM

Client : **Assistant Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Sri. Chethan P,** Contractor, Bangalore.

Name of Work : Pothole filling to Roads in Ward No.06 (Thanisandra) Surrounding area Byatarayanapura Sub Division, BBMP, Bangalore.

IS Code: : IS 2386 (Part 1):1963(RA 2011)

Date of Testing : 09.03.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, grar 10000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Requirement as per MORTH 5th edition table no 400.13
53	0	0	0	100	100
45	192	192	1.9	98.1	95-100
22.4	2536	2728	27.3	72.7	60-80
11.2	2168	4896	49.0	51.0	40-60
4.75	1845	6741	67.4	32.6	25-40
2.36	1158	7899	79.0	21.0	15-30
0.600	589	8488	84.9	15.1	8-22
0.075	1252	9740	97.4	2.6	0-5

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Job No.: CACE/BBMP/CP/W.No.06/2021-22 Date: 09.03.2022

Aggregate Impact Value

Client	**Assistant Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Sri. Chethan P,** Contractor, Bangalore.
Name of the Work	Pothole filling to Roads in Ward No.06 (Thanisandra) Surrounding area Byatarayanapura Sub Division, BBMP, Bangalore.
IS Code	IS 2386 (Part 4):1963(RA 2011)
Type of Mix	Wet Mix macadam
Date of Testing	09.03.2022

Sl No.	Details	Test No. 1	Test No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	379	381	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	86	88	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	293	293	
4	Aggregate Impact value = percent fines 100^{*} (W_2/W_1)%	22.69	23.10	22.89

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%(As per MORTH Specication table 400.12)

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Job No.: CACE/BBMP/CP/W.No.06/2021-22 Date : 09.03.2022

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Assistant Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Sri. Chethan P,** Contractor, Bangalore.
Name of Work	Pothole filling to Roads in Ward No.06 (Thanisandra) Surrounding area Byatarayanapura Sub Division, BBMP, Bangalore.
BIS code:	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	09.03.2022

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 400.12
1	Flakiness Index %	10.90	11.60	Combined Flakiness & Elongation index Max 35%
2	Elongation Index %	12.50	12.70	
	Combined Flakiness & Elongation index	23.40	24.30	

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Job No.: CACE/BBMP/CP/W.No.06/2021-22 Date : 11.03.2022

ATTERBERG LIMITS TEST FOR WMM

Client : **Assistant Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Sri. Chethan P,** Contractor, Bangalore.

Name of Work : Pothole filling to Roads in Ward No.06 (Thanisandra) Surrounding area Byatarayanapura Sub Division, BBMP, Bangalore.

IS Code: : IS 2720(Part 5):1985

Date of Testing : 09.03.2022 to 11.03.2022

Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	21.00	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum

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Job No.: CACE/BBMP/CP/W.No.06/2021-22 Date : 11.03.2022

ATTERBERG LIMITS TEST FOR WMM

Client : **Assistant Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Sri. Chethan P,** Contractor, Bangalore.

Name of Work : Pothole filling to Roads in Ward No.06 (Thanisandra) Surrounding area Byatarayanapura Sub Division, BBMP, Bangalore.

IS Code: : IS 2720(Part 5):1985

Date of Testing : 09.03.2022 to 11.03.2022

Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	19.50	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Job No.: CACE/BBMP/CP/W.No.06/2021-22 Date : 16.03.2022

Aggregate Gradation Test

IS : 2386 Part I

Client	**Assistant Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Sri. Chethan P,** Contractor, Bangalore.
Name of the Work	Pothole filling to Roads in Ward No.06 (Thanisandra) Surrounding area Byatarayanapura Sub Division, BBMP, Bangalore.
BIS Code	IS 2386(Part 1):1963
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	16.03.2022

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.17	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	420	8.40	8.40	91.60	90 - 100	
9.5	486	9.72	18.12	81.88	70 - 88	
4.75	635	12.70	30.82	69.18	53 - 71	
2.36	689	13.78	44.60	55.40	42 - 58	
1.18	520	10.40	55.00	45.00	34 - 48	
0.600	546	10.92	65.92	34.08	26 - 38	
0.300	482	9.64	75.56	24.44	18 - 28	
0.150	366	7.32	82.88	17.12	12 - 20	
0.075	475	9.50	92.38	7.62	4 - 10	

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.17	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	415	8.30	8.30	91.70	90 - 100	
9.5	549	10.98	19.28	80.72	70 - 88	
4.75	682	13.64	32.92	67.08	53 - 71	
2.36	530	10.60	43.52	56.48	42 - 58	
1.18	559	11.18	54.70	45.30	34 - 48	
0.600	546	10.92	65.62	34.38	26 - 38	
0.300	688	13.76	79.38	20.62	18 - 28	
0.150	198	3.96	83.34	16.66	12 - 20	
0.075	470	9.40	92.74	7.26	4 - 10	

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Job No.: CACE/BBMP/CP/W.No.06/2021-22 Date: 16.03.2022

Aggregate Impact Value

Client	**Assistant Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Sri. Chethan P,** Contractor, Bangalore.
Name of the Work	Pothole filling to Roads in Ward No.06 (Thanisandra) Surrounding area Byatarayanapura Sub Division, BBMP, Bangalore.
BIS Code	IS 2386(Part 4):1963
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	16.03.2022

Sl No.	Details	Test No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	382	384	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	297	297	
4	Aggregate Impact value = percent fines 100* (W_2/W_1) percent	22.25	22.66	22.45

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24% (MORTH table no.500.16)

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Job No.: CACE/BBMP/CP/W.No.06/2021-22 Date : 16.03.2022

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Assistant Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Sri. Chethan P,** Contractor, Bangalore.
Name of Work	Pothole filling to Roads in Ward No.06 (Thanisandra) Surrounding area Byatarayanapura Sub Division, BBMP, Bangalore.
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Bituminous Concrete
Date of Testing	16.03.2022

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 500.16
1	Flakiness Index	12.6	12.9	Combined Flakiness & Elongation index Max 35%
2	Elongation Index	13.5	13.8	
	Combined Flakiness & Elongation index	26.10	26.70	

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Job No.: CACE/BBMP/CP/W.No.06/2021-22

Date: 16.03.2022

TEST REPORT

Client	:	**Assistant Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	:	**Sri. Chethan P,** Contractor, Bangalore.
Name of the work	:	Pothole filling to Roads in Ward No.06 (Thanisandra) Surrounding area Byatarayanapura Sub Division, BBMP, Bangalore.
IS Code	:	IS 73:2013, IS 1203:1978(RA 2008), IS 1205:1978(RA 2009), IS 1208:1978(RA 2009), IS 1209:1978(RA 2009)
Source of location	:	Hot mix Plant, Bangalore, VG 30
Date of testing	:	16.03.2022

The results of the tests conducted on the bitumen sample using for Bituminous Concrete

Sl. No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 °C, 1/10 mm	50	Min 45
2	Softening point, °C	52	Min. 47
3	Ductility at 27°C, cm	> 100	Min. 40
4	Flash Point, °C	286	Min. 220

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Job No.: CACE/BBMP/CP/W.No.06/2021-22

Date : 18.03.2022

Specific Gravity And Water Absorption Test

Client	**Assistant Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Sri. Chethan P,** Contractor, Bangalore.
Name of the Work	Pothole filling to Roads in Ward No.06 (Thanisandra) Surrounding area Byatarayanapura Sub Division, BBMP, Bangalore.
BIS Code	IS 2386(Part 3):1963
Type of Mix	Bituminous Concrete
Date of Testing	16.03.2022 to 18.03.2022

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2020	2022	2024	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1265	1267	1269	
4	Weight of saturated surface dry aggregate in air	W_3 g	2016	2018	2020	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_s)$ g	751	751	751	
6	Weight of oven dried aggregate	W_4 g	2010	2011	2012	
7	Specific Gravity	$W_4/(W_3-W_s)$	2.676	2.678	2.679	2.678
8	Apparent Specific gravity	$W_4/(W_4-W_s)$	2.698	2.703	2.708	2.703
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.30%	0.35%	0.40%	0.35%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%(MORTH table 500.16)

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NABL Accredited As Per ISO/IEC 17025:2017 Laboratory

Job No.: CACE/BBMP/CP/W.No.06/2021-22 Date: 23.03.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	:	**Sri. Chethan P,** Contractor, Bangalore.
Name of the Work	:	Pothole filling to Roads in Ward No.06 (Thanisandra) Surrounding area Byatarayanapura Sub Division, BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	23.03.2022

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.89	10.15	9 Kn (min)
2	Marshal flow, mm	2.64	3.11	2 – 4
3	Percent air voids in Mineral Aggregate	13.59	14.52	13 – 15
4	Voids in Compacted Mix	3.74	4.26	3 – 6
5	Percent Voids filled with Bitumen	68.91	69.74	65 - 75
6	Density, g/cc	2.25	2.26	--

Note:

⇒ This test report shall not be reproduced except in full, without written approval of the laboratory

⇒ The results indicated above are based on the tests carried out on the samples collected at the site.

⇒ Any Query regarding the report must be reported within 30 days from the date of testing.

ಸಹಾಯಕ ಅಭಿಯಂತರರವರು
ಬಿ.ಬಿ.ಎಂ.ಪಿ ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ

ಸಹಾಯಕ ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಭಿಯಂತರರವರು
ಬ್ಯಾಟರಾಯನಪುರ ಉಪ ವಿಭಾಗ
ಬಿ.ಬಿ.ಎಂ.ಪಿ., ಬೆಂಗಳೂರು-26

For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

No.01, Satvika Nilaya, Opp. Widia Poorna Prajna School,
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PH.No: 9591618639 GST IN:29CNWPD9510K1ZB Email:civilaimconsultants@gmail.com

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BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

AASHTO T 164 & AASHTO T 30

CLIENT	**Assistant Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
AGENCY	**Sri. Chethan P,** Contractor, Bangalore.
NAME OF THE WORK	Pothole filling to Roads in Ward No 06 (Thanisandra) Surrounding area Byatarayanapura Sub Division, BBMP, Bangalore.
SAMPLE ID	Hot Mix Plant, Bangalore
DATE OF TESTING	23.03.2022

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	472.5	473
3. Weight of Asphalt and Mineral matter Extracted, g	27.5	27
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g (corrected)	27.5	27
7. Bitumen content in %	5.50	5.40
8. Average	5.45	

GRADATION AFTER EXTRACTION

SIEVE SIZE mm	Test 1 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	13.9	13.9	2.9	97.1	90 - 100
9.5	66.8	80.7	17.1	82.9	70 - 88
4.75	92.6	173.3	36.7	63.3	53 - 71
2.36	45.5	218.8	46.3	53.7	42 - 58
1.18	38.3	257.1	54.4	45.6	34 - 48
0.600	50.9	308	65.2	34.8	26 - 38
0.300	46.3	354.3	75.0	25.0	18 - 28
0.150	38.2	392.5	83.1	16.9	12 - 20
0.075	46.4	438.9	92.9	7.1	4 - 10

SIEVE SIZE mm	Test 2 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	14.8	14.8	3.1	96.9	90 - 100
9.5	66.8	81.6	17.3	82.7	70 - 88
4.75	90.6	172.2	36.4	63.6	53 - 71
2.36	45.8	218	46.1	53.9	42 - 58
1.18	46.3	264.3	55.9	44.1	34 - 48
0.600	55.5	319.8	67.6	32.4	26 - 38
0.300	46.9	366.7	77.5	22.5	18 - 28
0.150	33.9	400.6	84.7	15.3	12 - 20
0.075	40.1	440.7	93.2	6.8	4 - 10

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